I Claim:

1. An apparatus for identifying an unknown DNA sample, said apparatus comprising:

a plurality of detection nodes, each of said detection nodes operable for allowing an interaction between a known DNA sample and an unknown DNA sample, and for generating an output signal if hybridization occurs between said known DNA sample and said unknown DNA sample; and

a decoder operative for receiving an input signal indicative of which of said plurality of detection nodes should be selected for processing, and for outputting control signals which operate to activate said selected detection node;

wherein each of said detection nodes comprises a first capacitor having a capacitance value which varies if hybridization occurs between said known DNA sample and said unknown DNA sample contained in said detection node, said change in said capacitance value is operative for generating said output signal.

2. The apparatus of claim 1, wherein said output signal has an amplitude which varies in accordance with variations of said capacitance value of said first capacitor.

3. The apparatus of claim 1, wherein each detection node further comprises:

a first capacitive voltage divider circuit capable of generating a first reference voltage signal;

a second capacitive voltage divider circuit capable of generating a second reference voltage signal; and

a differential amplifier for receiving said first reference voltage signal and said second reference voltage signal as input signals, and for generating said output signal, said output signal representing a difference between said first reference voltage signal and said second reference voltage signal;

wherein said second capacitive voltage divider circuit includes said first capacitor, and a variation in said capacitance value of said first capacitor causes a corresponding variation in said second reference voltage signal.

4. The apparatus of claim 3, wherein said detection node further comprises:

a first pass transistor operative for coupling a voltage supply to said first capacitive voltage divider and said second voltage divider; and

a second pass transistor operative for coupling an output of said differential amplifier to an output port of said detection node;

said first pass transistor and said second pass transistor being activated by said control signals output by said decoder.

5. The apparatus of claim 1, wherein said first capacitor comprises said known DNA sample and is capable of receiving said unknown DNA sample.

6. The apparatus of claim 5, wherein hybridization of said known DNA sample and said unknown DNA sample causes an increase in said capacitance value of said first capacitor.

7. The apparatus of claim 3, wherein said first capacitive voltage divider circuit includes a second capacitor having said known DNA sample, said second capacitor comprising the same amount of the known DNA sample as said first capacitor such that said first reference voltage signal and said second reference voltage signal are equal if said known DNA sample and said unknown DNA sample do not hybridize in said first capacitor.

8. A biosensor cell for identifying an unknown DNA sample, said cell comprising:

a first capacitive voltage divider circuit capable of generating a first reference voltage signal;

a second capacitive voltage divider circuit capable of generating a second reference voltage signal; and

a differential amplifier receiving said first reference voltage signal and said second reference voltage signal as input signals, and for generating an output signal, said output signal representing a difference between said first reference voltage signal and said second reference voltage signal;

wherein said second capacitive voltage divider circuit includes a first capacitor having a known DNA sample disposed therein and capable of receiving said unknown DNA sample, said first capacitor having a capacitance value which varies if hybridization occurs between said known DNA sample and said unknown DNA sample when said unknown DNA sample is delivered to said first capacitor.

9. The biosensor cell of claim 8, wherein a variation in said capacitance value of said first capacitor causes a corresponding variation in said second reference voltage signal.

10. The biosensor cell of claim 8, wherein said output signal has an amplitude which varies in accordance with variations of said capacitance value of said first capacitor.

11. The biosensor cell of claim 8, further comprising:

a first pass transistor operative for coupling a voltage supply to said first capacitive voltage divider and said second voltage divider; and

a second pass transistor operative for coupling an output of said differential amplifier to an output port of said biosensor cell;

said first pass transistor and said second pass transistor being activated by external control signals.

12. The biosensor cell of claim 8, wherein hybridization of said known DNA sample and said unknown DNA sample causes an increase in said capacitance value of said first capacitor.

13. The biosensor cell of claim 8, wherein said first capacitive voltage divider circuit includes a second capacitor having said known DNA sample, said second capacitor comprising the same amount of the known DNA sample as said first capacitor such that said first reference voltage signal and said second reference voltage signal are equal if said

known DNA sample and said unknown DNA sample do not hybridize in said first capacitor.

14. A biosensor cell for identifying an unknown DNA sample, said cell comprising:

means for generating a first reference voltage signal;

means for generating a second reference voltage signal; and

means for receiving said first reference voltage signal and said second reference voltage signal as input signals, and for generating an output signal, said output signal representing a difference between said first reference voltage signal and said second reference voltage signal;

wherein said means for generating said first reference voltage includes a first capacitor having a known DNA sample disposed therein and capable of receiving said unknown DNA sample, said first capacitor having a capacitance value which varies if hybridization occurs between said known DNA sample and said unknown DNA sample when said unknown DNA sample is delivered to said first capacitor.

15. The biosensor cell of claim 14, wherein a variation in said capacitance value of said first capacitor causes a corresponding variation in said first reference voltage signal.

16. The biosensor cell of claim 14, wherein hybridization of said known DNA sample and said unknown DNA sample causes an increase in said capacitance value of said first capacitor.

17. The biosensor cell of claim 14, wherein said means for generating a first reference signal includes a second capacitor having said known DNA sample, said second capacitor comprising the same amount of the known DNA sample as said first capacitor such that said first reference voltage signal and said second reference voltage signal are equal if said known DNA sample and said unknown DNA sample do not hybridize in said first capacitor.

18. A method of identifying an unknown DNA sample, said method comprising the steps of:

generating a first reference voltage signal;

generating a second reference voltage signal utilizing a first capacitor having a known DNA sample disposed therein and capable of receiving said unknown DNA sample, said first capacitor having a capacitance value which varies if hybridization occurs between said known DNA sample and said unknown DNA sample when said unknown DNA sample is delivered to said first capacitor; and

generating an output signal representing a difference between said first reference voltage signal and said second reference voltage signal.

19. The method of claim 18, wherein a variation in said capacitance value of said first capacitor causes a corresponding variation in said second reference voltage signal.

20. The method of claim 18, wherein hybridization of said known DNA sample and said unknown DNA sample causes an increase in said capacitance value of said first capacitor.

21. The method of claim 18, wherein said method of generating a first reference signal includes a second capacitor having said known DNA sample, said second capacitor comprising the same amount of the known DNA sample as said first capacitor such that said first reference voltage signal and said second reference voltage signal are equal if said known DNA sample and said unknown DNA sample do not hybridize in said first capacitor.